HORN

A design for a a sanitarium

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A DESIGN FOR A SANITARIUM

BY

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THESIS

FOR THE

DEGREE OF BACHELOR OF SCIENCE

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THIS IS TO CERTIFY THAT THE THESIS PREPARED UNDER MY SUPERVISION BY

BENJAMIN ALBERT HORN

ENTITLED A DESIGN FOR A SANITARIUM

IS APPROVED BY ME AS FULFILLING THIS PART OF THE REQUIREMENTS FOR THE

DEGREE OF BACHELOR OF SCIENCE IN

ARCHITECTURE.

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HEAD OF DEPARTMENT OF Architecture.

ANALYTICAL TABLE OF CONTENTS.

A DESIGN FOR A SANITARIUM.

INTRODUCTION.

The sanitarium is not simply a hospital equipped with various medical means for the prevention and treatment of disease by scientific skill. It embodies, rather, the use of natural remedies, such as the water from springs, or mud. Such springs usually contain some chemical constituents which have some curing properties for particular ailments. Their efficacy may lie in baths of such waters, or in their internal application. For ailments such as nervous diseases, gout, rheumatism and other diseases of the muscles and nerves, the baths have particular value. Mud baths have particular efficacy here. For troubles of internal location, digestive system, liver troubles and the various diseases that can be directly traced to injury of the digestive tract the internal application by gargles, pumping, or merely swallowing are found especially conducive to return of health.

There are many examples of these different forms of baths in the world. Those in Europe have attained fame thru' the many cases of actual healing which are attributed to them. Those in the United States tho' still comparatively new have their curative powers known and are much patronized.

In most countries the baths are located near springs of medical value, whose water is piped to the bath buildings.

The bath and hotel buildings may thus be located at pleasure in the vicinity of the springs. In consideration of these executed sanitariums it seems desirable, in the statement of the problem to specify the presence near by of springs of medicinal value.

The buildings to be located near enough to them so the water might be piped to the baths of the sanitarium.

No detailed discussion of the design submitted for this thesis will be taken up in this text,for the drawings ought adequately show the arrangement and the purposes of the design. The design embodies three buildings;a hotel building,five stories in height,containing guest rooms in the three middle stories helps rooms in the attic,and administrationrooms and medical offices in the first story. Their are two bath buildings,one exclusively for men,the other for women. They are identical in arrangement,size,and equipment. These buildings are two storied and connected to the hotel building by covered arcades.

Besides these three buildings a gymnasium and a hospital could be brought into the composition,but since these are somewhat beyond the scope of this thesis they are not considered in this design.

The subject matter embodied under the title"History of Sanitariums" is designed to include the best methods of bath and sanitarium equipment found in history down to the present time.It includes such points as could not be adequately represented in the drawings accompanying this thesis.

LIST OF DRAWINGS SUBMITTED.

Plan of the first floor.

Plan of the second floor.

Front elevation.

Side elevation.

SCHEDULE OF ROOMS.

MAIN BUILDING.

First floor	Size in feet.
Entrance lobby	42 X 84
Rotunda	56 X 56
Clerk's office	7 X 16
Business office	28 - 18
Cashier	18 - 16
Post-Office	16 X 17
Telephone	12 X 17
Physician	16 X 17
Dental	12 X 17
Skin specialist	26 X 17
Oculist	16 X 17
Chiropodist	11 X 18
Hair dresser	18 X 18
Womens physician	18 X 18
Obstetrical department	35 X 16
Private women's ward	13 X 16
Private women's ward	22 X 16
Preparation room- women	42 X 42
Laboratory	18 X 18
Medical Clerk	11 X 16
Reception room	16 X 16
Head Physician	16 X 25
Assistant physician	8 X 16
Assistant physician	8 X 16

Pharmacy		17 X 25
Anthopometric room		15 X 17
Nurses office		17 X 17
Barber shop		17 X 18
Laboratories		17 X 70
Nursery		36 X 44
Billiard room		36 X 44
Game room		16 X 22
Smoking room		16 X 22
Preparation room - men		42 X 42
Kitchen		46 X 84
Serving room		24 X 50
Stair's	2 -	9 X 28
	2 -	10 X 22
Main stairs		16 ft. wide
Elevators	4 -	6 X 6
	2 -	6 X 8

Second floor

Grand parlor		32 X 84
Retiring rooms	2 -	8 X 17
Dining room		42 X 84
Serving room		24 X 50
Ladies parlor		42 X 42
Men's parlor		42 X 42
Patients rooms		
28 with bath		12 X 17
2 without bath		13 X 17
4 2 room suites		
Sitting room		17 X 24
Bed room		12 X 17

2 Solariums		36 X 44
Toilets	2 - 2 -	10 X 17 8 X 17

Third, fourth, and fith floors

Similar to 2 nd. floor.

BATH BUILDING.

(Mens and womens baths similar).

First floor.

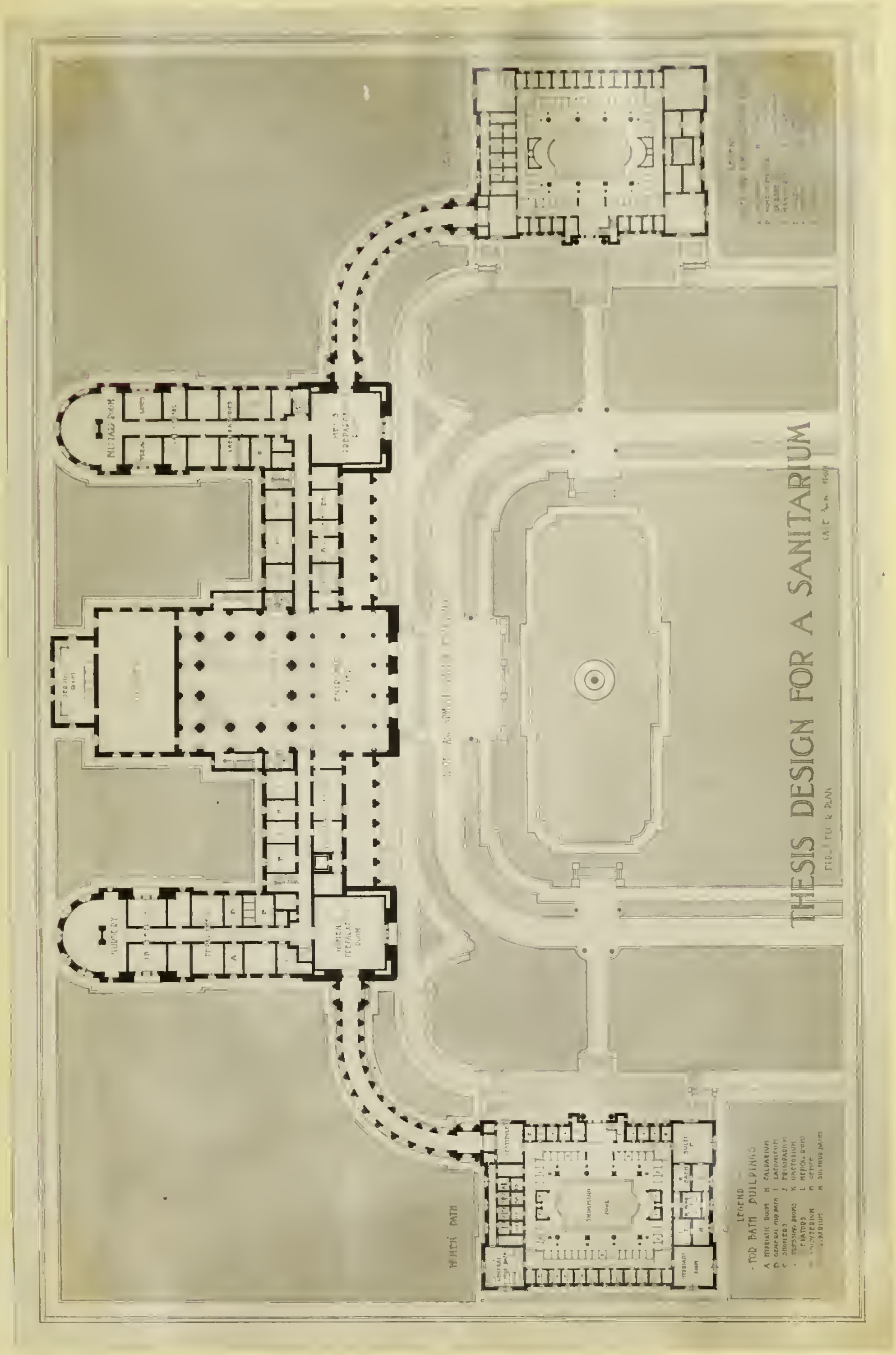
Turkish bath suite.		
Apodyterium		24 X 24
Tepidarium		9 X 16
Caldarium		9 X 16
Laconicum		9 X 16
Unctorium		9 X 16
Frigidarium		12 X 15
Hydriatic room		24 X 24
Mud baths		
Large room		24 X 24
Small rooms	4 -	8 X 16
Sulphur bath rooms	10 -	7 X 8
Office		
Nurses rooms	2 -	7 X 8
Wards	4 -	7 X 8
Toilet rooms	2 -	7 X 8
Dressing rooms	48 -	4 X 6
Pool		30 X 40
Shower rooms	2 -	7 X 16

Second floor.

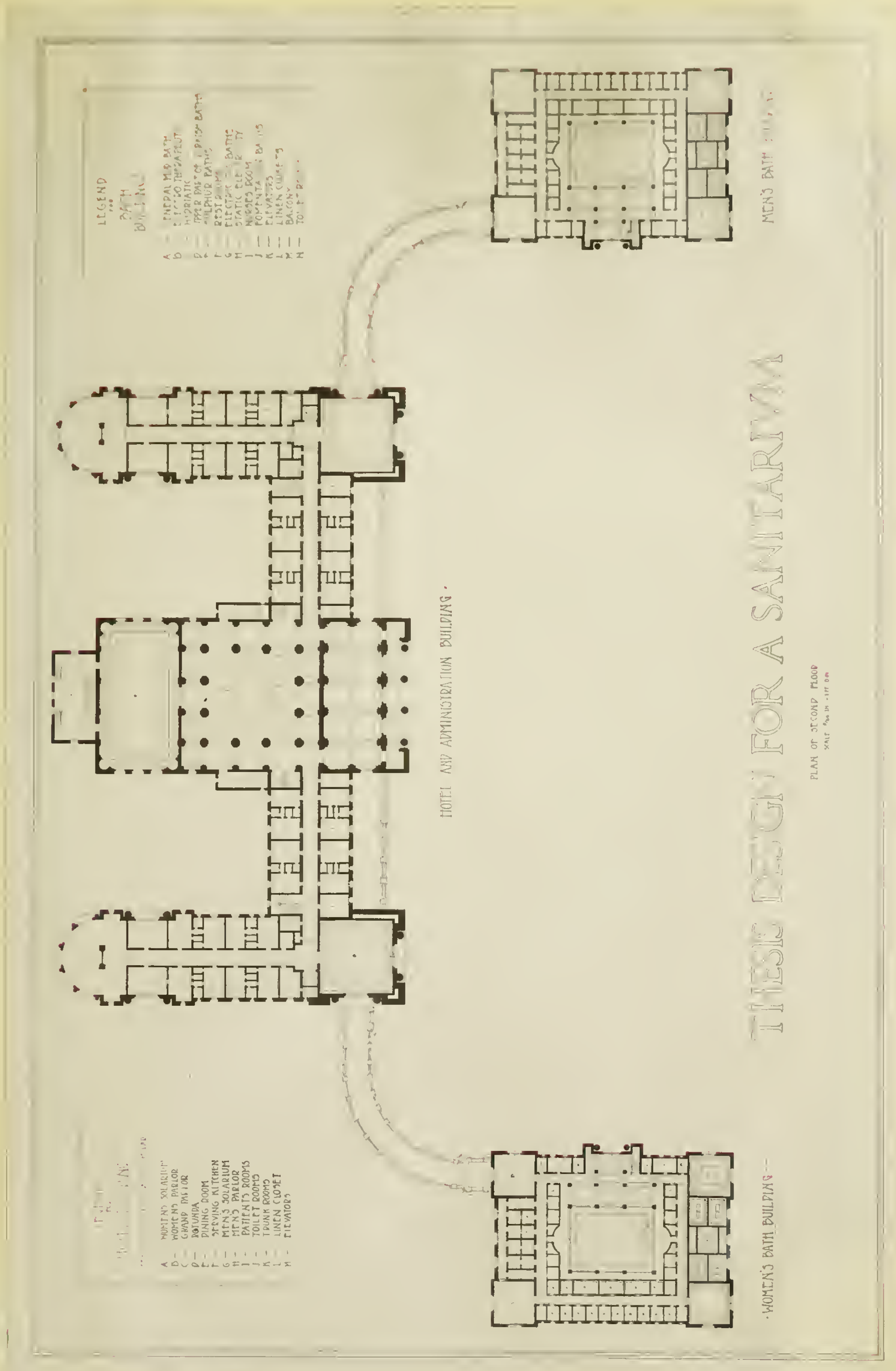
Upper part of Turkish bath suite		
Hydriatic room (electric)		24 X 24
Sulphur-bath rooms	18-	7 X 8
Rest rooms	3 -	8 X 15
Rest rooms	2 -	7 X 8
Inhalation room		8 X 15
Electric bath		8 X 15
Compress room		8 X 8
Sponge bath room		8 X 8
Nurses rooms	2-	8 X 8
Mud - baths	4-	8 X 16


THESIS DESIGN FOR A SANITARIUM

PHOTOGRAPHS OF THE DRAWINGS SUBMITTED FOR THIS THESIS



PHOTOGRAPHS. (continued)



HISTORY OF THE SANITARIUM.

Greek. The sanitarium method of treating disease by means of the curative power of water may be traced back in directly to the time of the Greeks. That the bath was an essential part of the Greek athlete's and soldier's training we have history to point to. Recently too, many examples of bath tubs and pools have been found among the excavations in Greece. Among the Greeks the warm water bath was looked upon as effeminate and was used merely as a luxury. Cold baths were extensively used however. The public and private baths usually contained three rooms. The bath room, with large basin; the massage room; and the undressing room; Even before the time of the supremacy of Sparta sweat baths followed by cold plunge of shower came into use. Such baths because of their origin were called "laconicum". Soon the taking of such a bath before the main meal became a custom.

Frequently these baths were built in connection with gymnasiums.

The oil flask and strigil were necessary bathing appliance.

There were a great number of medicinal wells and springs in Greece. The most famous, with hot sulphur springs is Aidepsos in Euboea in the present Lipso. Among other may be mentioned Thermopylae, Melos, and Lesbos. Most of these baths have now gone to decay and are used only by the poor inhabitants.

ROMAN BATHS.

As in Greece, the baths of Rome began very simply. Little regard for comfort or health was first given. The Tiber served for many years as the bath tub of Rome but when

the Cloaca Maxima was built the river could no longer be used for bathing. This necessitated the use of the bath room (balneum). The private baths soon were well developed.

The next step was the construction of the great public baths, thermae. These thermae were a development of the Greek gymnasium but surpassed them in all respects. They were equipped not only with all forms of baths but with libraries, lecture rooms, game rooms and other equipment for physical and mental development, as well as pleasure.

The arrangment of the baths consisted of a series of rooms of varying temperatures. There were essentially three rooms, the tepidarium, warm air room; the caldarium; the warm water bath; and the frigidarium cold water bath. The latter served as robing and disrobing room for those for whom it was not too cold, while sick and weak persons used the tepidarium for this purpose. In large establishments there was a special disrobing room called the apodyterium, and another room for cleaning or massage called unctorium. As a special bath was frequently introduced the sweat bath, called laconicum. For this bath there were frequently various chambers of varying temperature.

METHOD OF BATH.

In order to take a bath one entered at first the tepidarium, disrobed unless one has already done so either in the frigidarium or apodyterium. One seated oneself in this room and amid rubbing and massaging perspired very freely. This room rarely contained a bath.

From the tepidarium one went to the caldarium which contained one or more tubs of warm water. Only later the warm water pool

(calida piscina) came into use. Usually the shape of the room was rectangular, one side had tubs and on the other in a niche was a basin (labrum) of cold water for pouring over oneself.

The frigidarium contained a basin (piscina, cisterna, baptisterium) for the cold bath. If the water was too cold here the bather might go to the general pool which was open to the sky.

After completing the bath, massage and rubbing was indulged in in the unctorium or destrictarium. Besides cloths the strigil was used for this purpose.

The laconicum was used for the sweat bath and usually for medicinal purposes. The Roman emperor Agrippa utilized it to overcome the effect of excessive eating.

EXAMPLE.

As an example of a simple Roman bath the small private bath at Caerwent in England, excavated in 1855 may be taken. It belongs to the time, of Constantine the Great. The plan is given in figure (1) of the illustrations accompanying this article. It consists of the following rooms:- frigidarium, with piscina, apodyterium, tepidarium, caldarium, and laconicum, with a praeturium added. The rooms occupy a space 30 ft. X 33 ft.

The "Baths of Roman Villa at Allens" illustrated on the same sheet (fig.) is another simialar example. The use of the laconicum in a private bath is again illustrated.

As an illustration of a large bath the baths of Forum in Pompeii (fig) 3) may be selected. This building is made for women as well as men, the latter receiving the larger equipment. The new feature is the Ambulatio, the place where persons waited for their baths. Otherwise the arrangment is similar to the private baths just

mentioned. There is one exedra in the palestra. The circular shape of the frigidarium would suggest an intersting architectural effect. Another bath of this type is the Stabianer bath of Pompeii.

The baths of Caracalla, which are exceeded only in size by the baths of Diocletian and not surpassed by any in the world in beauty and grandeur. They were built 216 A.D. by Caracalla but were completed by his son. Alexander Severus added the columnal portico around, enclosing an area of 124,140 square meters. 2300 persons could bath here at one time.

The entire plan was arranged in two groups, a central building, the actual baths, 220 meters long by 114 meters wide, and a square structure around 337 to 328 meters long on each side. On the outer wall of the main building were supplied numerous individual baths for those, probably women, who did not desire to use the general baths. Around the outer structure were built rooms for philosophers, speakers, etc. The central structure had three large halls on its central axis, the frigidarium, tepidarium and caldarium, and between the tepidarium and caldarium was another smaller room also called a tepidarium. All other rooms repeated symmetrically on either side of the main axis. The frigidarium was 23 meters wide and 56 meters long. It was open to the sky. The caldarium was a circular, vaulted room, 50 meters in diameter and projected more than half way out from the building, thus receiving all possible sunlight. There are numerous smaller rooms for bath of various kinds, and meeting places.

Among other famous Roman baths of this type may be mentioned, The Baths of Titus, Baths of Alexander Severus, Bath of Diocletian, Baths of Constantine.

MEDICINAL BATHS OF ROME.

A fairly well preserved example is found in the ruins of the Baths at "Badeweiler". Also the sea baths of Stura, a square structure which was built adjoining the sea and consisted of various swiming pools which were surrounded by a row of individual dressing rooms.

At the fall of Rome the custom of bathing traveled Eastwardly and began the development of the most famous system of bathing ever established. Byzantium, Constantinople and other Eastern cities soon established numerous baths following in their methods the Turkish baths of today.

THE BATHS OF THE MAHOMMEDANS.

The prophet Mahomet prescribed regular bathing as a religious rite. Consequently the Moslems perfected their system of bathing. They followed essentially the ancient roman baths. From the Romans they conceived the idea of the hot air bath with its method of heating. They also retained the custom of rinsing after a sweat bath. The large bath and pool they discarded almost entirely, as well as the gymnasium usally attached among the Romans. As a partial substitute of the latter they had the massage by servants.

The Arabian or turkish bath (hammam) is a favorite spot for the Moslem. Every city and village is equipped with one. Constantinople has 169. The largest is Mahmud, Pascha, Hammam in Stambul.

The open baths are well heated and separated for sexes. Either there are separate buildings or men and women bath on different days. If a small piece of cloth hangs over the entrance

it signifies that the day is reserved for women's baths. The baths of Damascus are famous for the ellegance of their equipments.

ARRANGEMENT OF BATHS.

One steps into the bath by a corridor from the Street or Court. This corridor is usually broken in direction to conceil the view of the interior from the street. After passing the coffee room one arrives in a vaulted disrobing room (meschlah: Arabian). This consists of two parts, the middle portion ~~with~~ which those who are unassisted use, and the outer portion, undressing chambers (arabian; - diwan; turkish; soffa.) The room has ceiling light and a fountain in the center. Adjoining the disrobing room is a raised seat on which a guard sits. He keeps order here and checks valuables. The meschlah is unheated.

From this room one goes either directly or thru a passage into the second room of the bath. It is a partly heated room (arabian: bet - el-auel; turkish: souhluk: similar to the roman tepidarium. This room leads one to the third, the main room of the bath (arabia: harara; turkish; halvet. This room has a temperature of 44° to 48°C. In the middle is a marble basin. The harara is surrounded with smaller cells having a higher temperature than the main room. Rooms for massage and rest (mustaby) complete the plan. As examples of such baths may be mentioned the Turkish Bath at Athens, and the Mahomet Bath at Constantinople.

MEDICINAL BATHS.

The Orient posesses many medicinal baths. The most famous being the Baths of Brussa, founded in 180 B.C. at the foot of the Olympian in Asia Minor. The hot sulphur and ferrous oxide containing water has been led to the cities from the hills.

The special virtue lies in its curative powers of skin diseases and rheumatism. The temperature is 81°C. Some examples of these medicinal baths are Kara Mustafi; Jeni Kaplidache.

EAST AND NORTH EUROPEAN PEOPLE.

The Russian Bath is the only one developed in these countries which had any particular medicinal virtue. The value of the Russian bath lies in its rapid change from extreme heat to cold and the vigorous massage accompaying the bath.

WEST EUROPEAN PEOPLE.

The mineral or medicinal baths of Baden Arrgan were particularly famous in mediaeval times. The mineral baths of these days were called, bath wells, curing baths, or wild baths. Besides the above baths, Soden, Kreuzbad, Baden-Baden, Wiesbaden, Schwalbad, Wildbad, Carlsbad, Gastein, Liebenzell, Pfeffurs, Baden by Wien, Toplitz, Ofen and many others are mentioned.

EASTERN ASIATIC PEOPLE.

The Chinese bathe very little. The Japanese are great bathers but do not seem to have many medicinal baths.

MISCELLANEOUS.

The baths thus far considered have been quite general in their character. They have not been limited to medicinal. The further discussion of the subject will be limited to baths of medicinal value, giving such information as would be of value in designing a sanitarium.

The turkish-roman bath "LeHammam" figure(7) at Paris is an early excellent example of the type of bath developed in Paris. it contains a room for hydrotherapeutic treatments and has an individual sweat bath. Thru an entrance (k) one steps into the large disrobing room. This room has a gallery, having rest rooms.

In the center is a large pool which reaches to the entrance of the tepidarium. The tepidarium is an octagonal room with a domed ceiling. The four doors of the room lead into the ; shower room, (N) wash room (O) caldarium (S) and laconicum (Q) Between the two latter is the massage room (R) The entire baths are decorated beautifully in marble and faince s.

The first establishment in which water was used as a cure was erected by Vicecurz Priecssnitz.

BATH ROOMS, ARRANGMENTS AND EQUIPMENTS.

In consideration of this phase of the subject the equipment necessary to sanitarium methods or such as may assist in the design will be used.

BATH TUBS.

Among bath tubs are found the large bath tub, sitz bath, foot bath, basin for different parts of the body.

SHOWER.

The shower, spray, needle, douch and varieties of these types are classified under this subject. The shower is a comparatively modern contrivance and is exceedingly popular. In its various forms it offers many medicinal features.

POOL.

The swimming pool is an essential of bath house equipment. It is particularly enjoyable in a sanitarium, and some of the most famous sanitariums make the pool the great feature of their equipment. Occasionally patients are required to remain in the water for eight(8) hours. Such is the case for example in the Baths of Leuk. The pool is usually made of varying depth, from three to eight feet being popular, It should be made of cement, enameled, or white tile, or brick, and must be equipped with overflow. The slope should be gradual, Steps should not be placed

in the water. It is essential that a passage be allowed all around the pool. The temperature in the pool should be maintained at 20° - 22° C. The portion under the pool should, when possible, be made accessable in order to locate and repair leaks. (fig's.16 &17 show pool arrangements).

INHALATION BATH.

This consists in inhaling vapors and gases into the lungs. It is really not a bath but is often built in connection with baths and surely should be placed in a sanitarium. Inhaling apparatus may be taken individually or in a room containing several persons. The Augusta-Victoria Bath at Wiesbaden is equipped with inhaling apparatus.

STEAM BATHS.

In one form the bath is taken with the body inclosed in a chamber into which steam is injected. The bather may be recumbent, seated, or standing, but the head is usually outside of the steam chest. Such a chest requires a width of about 30 inches, height of 50 inches. The steam is best injected under the seat of the chair. Occasionally showers are placed at the front and back to spray the bather.

Another form is to have steam injected into a room large enough to contain several persons. Such a room is best vaulted in order to avoid the dropping of condensed steam on the bathers. Such a room may be 12 X 15 feet in size.

HOT AIR BATH.

This is usually a part of a Russian or Roman bath. The heat may be obtained by means of a fan system of injecting heated air or by means of radiators. The size varies with the number to use it. The usual temperature is 60° - 70°C.

SUN BATH.

This is a good bath and recommended by physicians. It merely requires a some what secluded space which can be reached by the rays of the sun. A roof garden is a good place for such a bath. The Solarium is its substitute in winter. The Solarium should be well ventilated and heated.

PNEUMATIC BATH.

Compressed air is the medicinal medium in the form of bath. The apparatus, consists of a cylinder or chamber about four (4) by five (5) feet wide and five (5) feet high. The chest has a door and a small window. Thru the latter the operater may observe the effect of the bath and regulate the pressure accordingly. A pump supplies pressure to about a half (1/2) atmosphere. The Augusta Victoria Baths at Wiesbaden are equipped with these chests.

ELECTRIC BATHS.

The use of electricity for curing disease is called electro-therapy. This science has made great advance in recent years and every good sanitarium has in its equipment a variety of electric baths.

The bath tub equipped with electric connection consists merely of running a current thru the water, usually by means of cells. Often the tub is made of zinc or copper . Currents of 50 to 200 mili - amperes are used. The length of bath is usually 10 minutes.

MISCELLANEOUS BATHS.

The remaining medicinal baths consists of baths of water with the addition of various chemicals such as sand, slime, and ice, extracts of herbs, salt, soda, The moor or mud

baths are an important branch.

THE MUD BATH.

In view of the fact that the design for the sanitarium treated in this thesis is to be equipped with mud baths a special detai~~l~~led treatment of arrangement may profitably be taken up here.

The arrangement of cells depends upon whether the tubs are to be portable or permanent. If the portable tub is used an opening is left in the wall next to the aisle thru which the tub of mud can be pushed. The run on which the tub rests is somewhat lower than the floor to make it easier to climb into the tub. Beside the mud tub the room contains a second tub with clear water for rinsing the body and also a shower for the same purpose.

If the mud bath tub is fixed in position the room is otherwise the same as an ordinary bath room excepting that the shower is essential.

In the Kaisenbad at Carlsbad the mud tub is raised from a room below by hydraulic pressure against the edge of a marble covering which ordinarily is part of the floor. These baths also contain a clear water tub set in the floor with a shower above. The wash basin and water closet are incidentals which are convenient.

In the best baths a special room for disrobing is connected with the bath room. This room may be equipped with a bed or couch upon which the bather may rest after the bath. The use of this special room makes it possible to refill the tub without inconvenience to the bather. This room may be separated from the bath room by merely a wood,tile, or stone partition. It may be mentioned that the use of the bath by one person continues from

one to two hours. The general room for mud baths is frequently installed. It may contain several sets of tubs and couches and can accomodate a greater number of patients than the various individual baths. In some systems instead of a tub, a cot with walls of three or four inches in height is lined with a rubber sheet. The patient lies on this sheet and the hot mud is packed around him to a depth of three or four inches, the rubber sheet keeping it close to the body. This method of course is followed by the usual bath of clear water and the rest.

The moor-mud is usually brought from some swampy region which by some means has been discovered as having healing qualities. The influences which tend to heal may be of vegetable or mineral origin. Occasionally mud beds are found whose properties are obtained by the deposits of certain plants. In the United States are numerous instances of mineral compounds such as sulphur saline or lethia water ingredients in the mud. In fact, the presence of sulphur in mud baths is quite common and usually offers the possibility of clear sulphur bath cures as well. The following article will deal with the equipment for sulphur baths as illustrated in present examples.

SULPHUR BATHS.

The equipment for sulphur baths may include a large pool and numerous individual baths. In the best equipped establishments the individual baths are used in preference to the pool. The individual bath rooms are equipped in the ordinary way with large size tub, and accessories of the bath room. It is essential that the tub be of generous size so the patient may be fully immersed and the temperature of the water may be retained

high. Sulphur baths are taken in water coming directly from the hot sulphur springs whenever possible. Their temperature is regulated according to the prescription of the physician. The bath may last from twenty (20) to forty five (45) minutes. After the bath a rest is usually taken. Some sanitariums allow the patient to rest in the bath room, others have separate rest rooms with couches. The rest rooms are especially to be recommended for persons who are receiving treatment for which sulphur baths are efficacious. Such diseases as rheumatism, neurasthenia and catarrh.

EXAMPLES OF EXISTING SANITARIUMS AND BATHS.

Medicinal baths and sanitariums are differentiated as therapeutic baths from the ordinary hygienic baths. Their equipment and planning requires special attention. The great variety of medicinal baths may be divided according to their properties into a series of groups:- Ordinary water baths, thermal baths, mud baths and finally sea baths. The latter however are chiefly a source of pleasure rather than cure and can well be neglected.

The ordinary water baths have as their special medicinal value their connection with well known therapeutic principles of health such as, massage, steaming, rubbing. They are usually used with the addition of some outside agent as a chemical, or electricity. The different methods of applying the water has developed a system of hydriatics , covering a wide range and variety of baths. According to one sanitarium we find the following different kinds of bath in which water is the chief medium.

SPRAYS:- Cold, cool, neutral, warm, hot, alternate, revulsive.

Jet DOUCHE:- Cold, cool, neutral, warm, hot, alternate, revulsive, percussion.

Immersion bath:- Cool, tepid, neutral, hot, graduated, effervescent (Nauheim) saline, alkaline.

Sitz bath:- Cold, cool, tonic, neutral, hot, revulsive, graduated.

Half bath:- Hot, tepid, cool.

Shallow bath:- Cool, tepid.

Foot bath:- Hot, cold, shallow, running, revulsive.

Leg bath:- Warm, hot, revulsive.

Packs:- Oil, dry hand, centripetal, alcohol, witch hazel, dry shampoo, wet mitten, towel, half sheet, wet sheet, salt.

Fomentations to various parts of the body.

Compresses to Various Parts:- Cold, cooling, heating, hot, and cold, alternate, revulsive, proxinal.

Electro Hydric Bath - Sinusoidal, galvanic.

Russian bath.

In addition to the above the following are used in other institutions.

Vaper douche:- alternate, revulsive.

Sponging - Hot, tepid, cool, alternate, saline, alcohol.

Vapor bath,

Turkish Shampoo

Swedish Shampoo

Enema

Coloclyster

Irrigation

THE THERMAL BATHS (SPRINGS, & WELLS OF MEDICINAL PROPERTIES).

Chalybeate, saline, vichy, carbonic acid gas etc.

Under the above titles will be included all wells and springs of known medicinal value other than sulphur springs. The latter will be given special treatment because they have been assumed as part of the medicinal supply of the sanitarium considered in this thesis.

The chalybeate, saline, and other similar baths, serve a variety of diseases. They may act upon the internal tract, the digestive system, stomach, liver, kidneys; or may act upon the bones or muscles because of external application. Some have the property of purifying and cleansing the skin pores, others ease the pain in joints or muscles such as rheumatism, gout, etc. Among baths of this kind the following are a few:- Homburg, Kessingen, Soden, Hungary, Baden-Baden, Wiesbaden, Oeynhaufen, Biln, Salzbrunn, Ems, Carlsbad, Marien bad, Wildungen. Some of these are also equipped with sulphur baths which are taken up now.

SULPHUR BATHS.

These baths contain sulphur in gaseous formation with hydrogen, partly also as a solid property in the form of alkali, as Kalcium, magnesion etc. The baths of Aachen, Budapest, Landeck, and Richfield Springs (N.Y.) Hot Springs, Ark, and others belong to this type.

THE MOOR OR MUD BATHS.

These baths may be considered of two kinds.

1. MOORBATH:-

These contain besides the mud, iron. There action depends upon the viscosity, the temperatur and the chemical action, of the salt contained in the mud on the free acids. The temperature is of particular importance. Among these baths may be mentioned:- Franzensbad, Elster, Steben etc.

2. SULPHUR - MUD BATHS:-

These baths contain besides the vegetable mud, solid sulphur as alkalies. The~~re~~ir action is similar to the sulphur bath. Among such baths are found:- Langenfeld, Nenndorf, Dreiburg.

TYPES OF SANITARIUMS AND BATHS.

1. Hydrotherapeutic.
2. Thermal establishments (limited to sulphur springs)
3. Mud baths (limited to sulphur-mud)
4. General sanitariums.

With these divisions in view we may consider the factors which govern the plan of the buildings to be erected for the purposes of a sanitarium; and gather, from the examples offered, ideas regarding the site, requirements, and arrangement of plan.

SITE.

The presence and location of the medicinal springs, mud beds etc. must be considered, bacause distant location from these sources necessitate expense of transportation. Finally, the presence of a forest, park, or stream will have some influence on the selection of a site.

REQUIREMENTS.

It is necessary to specify the number of people and kinds of baths which they desire to take at specific times, also if the particular building is to be used alone as a bath house or in connection with a hotel, as is often done in these cases.

ARRANGEMENT.

The ordinary requirements of a city bath house

hold for this case as well. In cases where invalids will use the baths it is essential that convenient modes of passage to and from baths be supplied. It must be so arranged that the patient can be brought from the hotel to the bath in the wheel-chair. When more then one story are used it is necessary to have elevators of large capacity. The bath building may be placed in wings when a hotel is present. It seems desirable too, that seperate buildings be used by men and women. The introduction of Swedish gymnastics or physical training of any kind is good and may be taken care of in a separate building. However this is not essential to the problem and need not be considered in detail at this point. The use also of a separate hospital for especially ill patients is to be recommended but need not be dwelt upon longer, for that in itself is a large problem and beyond the scope of this thesis.

1. Hydrotherapeutic establishments.

The sanitarium built by Mockel in Zwickau (fig. 23 & 24) in 1866-1869 is a two storied structure which contains besides the baths, rooms for sick patients. The first story contains living and reception rooms, seventeen (17) bath rooms, a Roman-irish bath and wash and laundry rooms. The second story contains bed rooms, and special bath rooms for very sick patients. The tubs are set into the floor, are built of brick and lined with white enamel.

Another example of hydrotherapeutic cure is the so called "Kneip" cure which consists in pouring, spraying, douche and other means of using water. As an example of this may be mentioned the Bathing establishment in Haarlem, erected thru the influence of

Dr. Outschanz.

There are numerous other illustrations of this type of sanitarium but they will be taken up in detail under the subject of general sanitariums.

2. Thermal establishments. (With sulphur springs).

The Sulphur bath at Langenfeld in the "Oetzthal" is a small bath in connection with a hotel. It was built in 1891-92 by Walter to utilize the waters which were so efficacious for rheumatism, neurasthenia, and catarrhal troubles. It contains baths of two classes, differing in equipment. The baths of the first class are supplied with copper tubs and showers and the baths of the second class are supplied with tubs of wood. The exterior of the building is suitable in character to the wooded surroundings, receiving a very picturesque treatment.

The Sulphur bath at Richfield Springs, New York, built by John Du Fais (figs.25&26) is an arrangement which has Turkish baths besides the sulphur baths. In addition there are also, a swimming pool, inhalatorium, solarium, and rooms for gymnastic exercises.

The building is two storied at the front, the remainder being one storied. In the entrance lobby is found the sulphur spring, ticket office and counters. To the left on entering are found the men's rooms, such as barber shop, manicure, respiration room, solarium, gentlemen resting rooms, and a series of bath rooms. The women's portion to the right corresponds in equipment having a ladies resting room, doctors offices, and electrical room.

In the central section are private baths and the turkish bath suites. Of the latter there are two, one for men and the other for women. At the extreme end and accessible alike by both, men and women, is the large swimming pool 17 ft. X 34 ft.

The second story contains pulverization rooms, inhalation rooms, and gymnasiums.

The Marienbad at Bad Landeck was built in 1878-80 by Voelkel over the Marien spring (sulphur spring) (figs.27-28) The peculiar plan shows a circular concentric building with a dome, to which are attached four wings. In the main floor under the d dome is found the well over which has been built a general pool for some thirty (30) persons. Around this room are 38 dressing rooms of which half are for men and half for women. In the axis of the wings are found the showers and entrances between which are light courts. The fourth circle contains the corridors and the outer ring consists of 38 cabinets for tub baths with their showers.

In the next story the middle ring serves as a promenade and in the outside ring are patient's rooms. The basin of the spring bath is lined with marble. The tubs of individual baths are of marble, partly built up by plates and partly in solid pieces.

3. Mud baths.

The Subject of mud baths may well be divided into two parts. Mud and slime. The Germans speak of slime (Schlamm) as an earthy substance of mineral origin which has been immersed in natural mineral water; mud (moor), on the other hand they consider as a vegetable formation similar to turf or peat, which contains between the thread of its roots the healing mineral water besides its by-products. It requires great care to get the material properly mixed and of the proper temperature. This is especially necessary at slime (Schlamm) baths, for its specific gravity is higher than the mud (moor). In order to overcome this the best establishments heat the material by steam

and have mechanical devices by which the mud is properly stirred.

The Royal mud bath at Nenndorf (fig.19) has really been in existance since 1787. The old buildings were replaced by new ones in 1890 - 92 after plans by Knipping, Roettscher and Linker thru Schleyer. The site was selected with regard to accessability of sulphur water and its disposal.

The main building is one storied except that its middle portion has a low attic for rooms. The mens baths lie to the right, the womens to the left. The entrances are separate but are reached from a common terrace, They are separated by the room for partial baths such as wash basins for face, hands, arms etc. A corridor from the entrance vestibule leads to the bath rooms. These rooms are lighted from the rear in that the windows are placed high enough that the light extends over the low separating wall at the back of the bath room. Each half contains 8 rooms, of which one is called the salonbath. The various rooms consist of two parts, the bath room, and the rest room. Such an arrangement is desirable because the patient after a mud bath can readily catch cold if forced into the draft of the corridor. The rest time can be utilized to clean the tubs and prepare the bath for the next patient. The length of the bath including rest is usually two (2) hours, so that by six changes, ninety six (96) bathers can be accomodated in sixteen (16) baths in one day.

The portable mud tub is sunken, and at right angles to the same is the clean water tub. The rest room is separated from the bath room by a thin wall seven feet high. At the end of each corridor are rooms for attendants and toilet rooms. Another toilet rooms is near the entrances.

Back of the main structure is the kitchen for preparation of

the mud, further a repair room, machine room, and boiler house. On both sides of the latter lie the mud beds. One side for fresh, the other for utilized mud.

Preparation of mud.

The mud, taken naturally from its bed, is first cleaned of all large matter, stones, wood, roots etc. after which it is placed in the left bed. From here the mud goes to the mill where with the addition of sulphur water it is ground to a thick mush (1kg. mud equaling 1.25 kg. water). For the completed bath more sulphur water is added, so that kg. mud equals 2.5 kg. of water. From the mill the mud goes to the kitchen and here during constant stirring is placed in the tubs. Warming in the tub is necessary because the same mud is used five (5) times by the one patient.

The mud bath at "Bad Elster" is not merely a bath house but is combined with salt and mineral springs of this famous place. It contains a so called "cure house", mineral baths, and the old and new mud baths. The new portion deserves mention. These baths constitute a structure one hundred thirty five (135) feet long and twenty one (21) feet wide. There are thirteen (13) bath rooms, each room is 10 ft. wide twelve (12) feetlong and 12 ft. high. The walls are finished in marble for three feet above the floor.

The mud tubs here too are pushed thru small doors into the bath room. Both tubs are in the center of the room and are easily accessable. There is a special building for the preparation of the mud.

The"Kaiser-Wilhelm Bad" at Hamburg (~~fig. 22~~) may be considered under the subject of mud baths the it contains mineral baths besides mud baths. The building consists essentially of three parts. The middle portion containing the mud baths and inhalatorium,

to the right and left respectively, mineral baths for men and women. The connecting links are used for toilet and waiting rooms. Each of the side wings contain 24 bath rooms, 2 large baths a pool with 2 separate dressing rooms, 2 shower rooms, a piscina. The middle portion for mud baths and inhalatorium is fully divided for men and women. Each side has four (4) mud baths, each, of two tubs as usual. The rooms are separated by the service passage which is connected directly with the mud preparation building at the rear.

GENERAL SANITARIUMS.

Under this title will be included all such health resorts, baths, springs, and sanitariums which may be of service in the consideration of the problem which this thesis presents.

The Koenig Karls - Bad at Wildbad (~~fig. 20~~) was built by Berner in 1889-92. It contains seventeen (17) bath rooms. two(2) turkish bath suites besides, gymnasium and reading rooms.

The exterior is of yellowish gray sand stone and interior finished in marble and metal.

The Friederichsbad at Baden-Baden (~~fig. 21~~) built by Dernfeld in 1869-77 contains besides tub baths an elaborate system of Roman baths. It was originally designed for both sexes and had similar rooms repeating on either side of a central axis. Only the swimming pool and the "Wildbad" did not repeat. Since the opening of the "Kaiserin Augusta" Bath it is used exclusively by men.

In the ground story there are a number of individual bath rooms, an electric bath, a cold water cure, as well as a respiration room. The upper story contains the turkish bath and gymnasium.

The "Kaiserin Augusta" Bath at Baden-Baden, mentioned before

is a counterpart of, and substitute for the Friedrichsbad. The shape of plan is however different. It is used exclusively by women. The rest rooms, containing beds are an added feature that seem useful. This building was built after plans by Durm.

The "Kaiser bad" at Carlsbad, (fig. 29) designed by Fellner and Helmer was completed in 1895. The buildings consist of a main bath building and an adjoining preparation building for the mud baths. The bath building has four stories. These stories contain equipment for mineral and mud baths, cold water treatments, sweat baths and swedish gymnastics.

The basement story contains two portions, one for men, the other for women. The front part of the building contains the rooms for cold water treatment. Each portion has a waiting room, fifteen (15) dressing rooms, a number of rest beds, cold and tepid plunges, foot, and sitzbaths, as well as the various showers. In the horseshoe shaped, rear portion, enclosing a court are on each side, sixteen (16) bath rooms which consist of an undressing room and a bath room. There are also eight (8) individual sweat baths which consist of a dressing room, hot air and steam room, cold and tepid plunge, and a drying room.

The ground floor and the second story contain in the horseshoe portion the mud baths. There are twenty eight (28) in the ground floor and twenty five (25) in the second story. The front portion of the ground floor contains rooms for office, physicians, two waiting rooms, rest rooms and cooling room . In the second story front are found the great hall for Swedish gymnastics, the necessary auxiliary rooms and various massage rooms.

The third story contains twenty five(25) mineral baths and

two electric baths.

The adjacent building contains the equipment for the preparation of the mud. The basement story of which is connected to the basement of the main building. The tubs can be sent then thru a passage to an elevator and hoisted whichever floor is desired.

The"Augusta Victoria" bath at Wiesbaden designed by Modow, Heim, and Weidman has a double purpose as public bath, and as a sanitarium. It contains nearly all forms of medicinal baths, electric, steam, cold water and mud baths and is used by both sexes. The building is divided evenly into halves for the services of the different sexes. It contains two large swimming pools and two turkish bath suites.

Besides these mentioned in detail there are many baths, especially in Europe, which have been famous for centuries, have been visited by royalty and are the great health resorts of Europe. These have their place in the world not so much as the sanitariums, which are to be considered in this problem, but are more, resorts of pleasure and recuperation than cure of disease. A few will be mentioned here.

Herkules Bad in Austria Hungary has nine (9) springs, the main spring flowing 5000 cubic feet per hour. The springs owe their efficacy to the salts; sulphur, rodine, bromine, and chlorine and sulphureted hydrogen with the gases, nitrogen and carbonic acid. The temperature is 70° - 145°F. Luchain-les-Bains in France is a bathing establishment covering 5000 square yards. A beautiful collonade ninety seven (97) yds. long is a feature . The Baths of Leuk in Switzerland are sulphurous with a temperature of 124° F. The duration of bath is eight (8) hours.

The Baths of St. Moritz are chalybeate. The bath is 25 minutes long.

The Carlsbad in Austrian Bohemia contains numerous springs arising from a basin 8000 feet below the surface. 2,000,000 gallons of water daily pour from the total of all the springs. The Sprudel spring with a temperatur of 164°F. is the most famous. It contains sulphate of soda, chloride of sodium, sulphate of potash, carbonic acid and salt.

The baths and sanitariums of the United States are still comparatively new and cannot compare with the European resorts in completeness of equipment or grandeur of architecture. There is however one sanitarium which has advanced greatly in recent years and is even now as large, as if not larger than, any similar institution in Europe. This is the Battle Creek Sanitarium, founded by Dr. J.H. Kellogg at Battle Creek, Michigan. From it a great many similar institutions have spread over the country.

The Battle Creek sanitarium had its inception at about 1860 in a small building having as its object the curing of disease by means of water.

The institution now occupies a large fireproof building 560 feet long and five (5) stories high. It has two bath wings and a gymnasium in addition at the rear being connected with the main building thru the palm garden. The axes of the bath buildings radiate toward the center of the rear of the main building and the gymnasium lies between, thus making a compact massing tho not altogether pleasing in appearance.

The main building contains the following rooms.

1st. floor.

Information bureau.
Reception room.
Post Office.
Literature depot.
Telegraph office.
Business managers office.
Chaplains office.
Medical office.
Library.
Grand parlor.
Gentlemens parlor.
Elevators (4)

2nd. floor
3 " "
4 " "
5 " "
patients rooms.

6th. floor.

Operating room.
Kitchen.
Serving room.
Dining room 50 ft. X 170 ft.
Solarium.
Roof garden.

The two bath buildings are similar, two stories high, well lighted and ventilated. They contain all of the various kinds of baths known to have curing effect for various diseases.

The elaborate system of diets requires an extensive kitchen arrangement.

The Long Beach Sanitarium in California is an outgrowth of the Battle Creek system and follows essentially the same scheme tho not as extensive. Under the subject of therapeutic baths will be found the various baths administered in these institutions.

Mudlavia, at Kramer, Indiana is a sanitarium whose system centers on the use of medicinal mud in curing disease, assisted by the internal use of sulpho-saline water. The Institution is conducted by Dr. R.B. Kramer.

Instead of the double tubs ordinarily employed for mud

baths in Europe this sanitarium has shallow cots covered with sheets. The patient is surrounded by three or four inches of the mud and rolled up in a rubber sheet. The bath rooms usually contain several tubs. There is also the general cooling room.

The Hotel Chamberlain at Old Point Comfort, Virginia has medicinal bath equipment in which the salt sea water is used extensively. Electric and steam baths are also installed as well as various other kinds of baths. It is however essentially a hotel.

Capon Springs Virginia has attained some reputation for a health resort due chiefly to the mineral contents of the water whose efficacy is more thru internal than external application.

At Hot Springs, Arkansas the U.S. government has erected a sanitarium for soldiers and sailors. The sanitarium accomodates 150 - 200 patients at a time. There are in the vicinity 40 springs some of which have been piped to the town. The temperature of the water is 150 F. It is sulphurous in composition.

TABULATION OF HISTORICAL EXAMPLES.

		Mineral Baths.	Mud Baths.	Turkish Baths.
Richfield Springs	New York	72		2
Nenndorf Baths			16	
Karlsbad "	Vienna	17		
Kaiserbad "	Carlsbad	25	53	
Augusta Victoria "	Wiesbaden	17	6	2
Lanbenfeld "	Oetzthal	14		
Marienbad "	Bad Landeck	38		

VOCABULARY.

ENGLISH	GERMAN	LATIN
Warm water bath	Warm Wasser bad	Caldarium
Cold water bath	Kaltes Wasser bad	frigidarium
basin	Becken	labrum
benches	Baenke	scholae
pool	Schwimm-bad	piscina
warm air room	warmes luft Stube	tepidarium
steam bath	Damphbad	laconicum
dressing room	Aus und Ankleidezimmer	apodyterium
baths	Baeder	thermes
heating room	Heizstube	praefurnium
single baths	Einzelbaeder	solien
mud	Moor	
Slime	Schlamn	
showers	Brause	

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Hydrotherapy J.B.Clow & Sons.

Capon Springs.

Hotel Sherman

Hotel La Salle

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A man that is a Roman Modern Sanitation. June 06.

Baths for the sick " July 06.

Herkulesbad (in Wild Hungary) " Aug. 06.

A city of Bathers " Aug. 06.

Bathing on Ship board " Sept. 06.

Marienbad and the Marvels of Mineral Mud " " 06.

Baths of France-The French Pyrenees " Oct. 06.

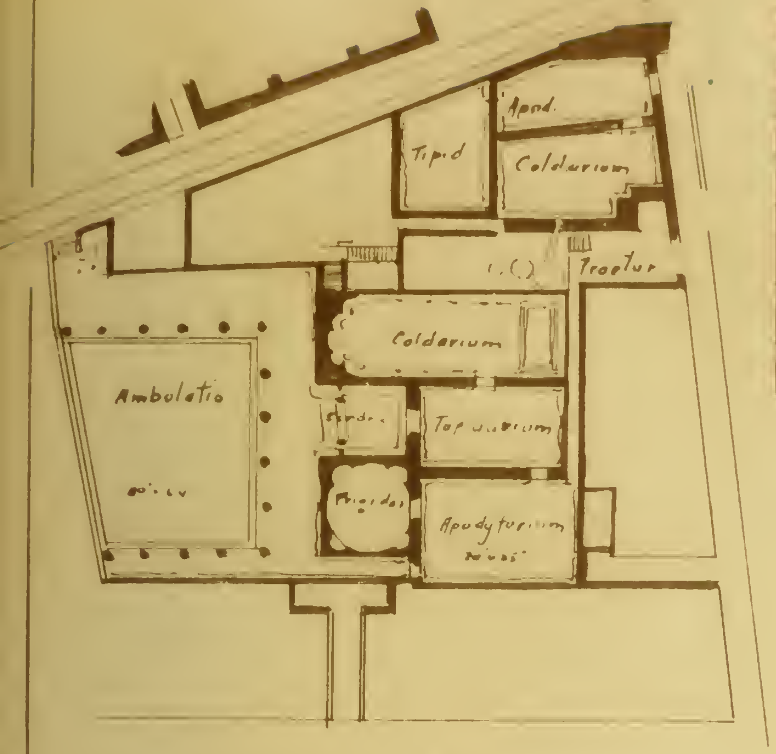
The Baths of Switzerland " Nov. 06.

The inconsistant oriental " " 06.

The Divine Mysteries of the Bath " Dec. 06.

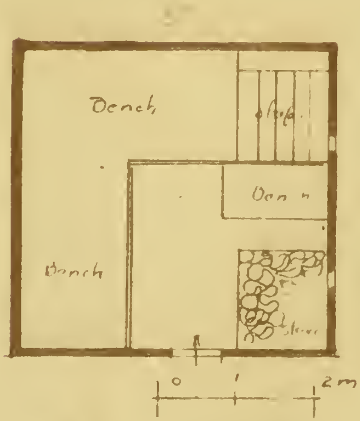
Wildbad Gastein	Modern Sanitation	Jan. 07.
The Baths of Pompeu	"	Jan. 07.
The Genius of the Baths of Islam	"	Feb. 07.
The Technique of Bathing	"	March. 07.
Some Mexican Hot Springs	"	April. 07.
Vichy - les-Bains	"	April. 07.
Bathing in Great Salt Lake	"	June. 07.
Bimini Baths	"	July. 07.
The Virtues of Vegetable Mud	"	Aug. 07.
Sanitary Equipment of Modern Hospitals	"	Sept. 07.
Public Baths of Budapest	"	Nov. 07.
Fleischman Baths. N.Y. City.	"	Jan. 08.
Glenwood Hot Springs	"	Feb. 08.
Baths of the Alhambra	"	April. 08.
Hindoo Bathing	"	June. 08.
A day with the Devil.	"	Aug. 08.
The baths of Leuk in Switzerland	"	Dec. 08.
Life at a German Sanitarium	"	Feb. 09.
Hot Springs, Arkansas	"	Apr. 09.
The Seraglio of a Thousand Baths	"	May. 09.

3



Baths of Forum in Pompei

Arabian Bath

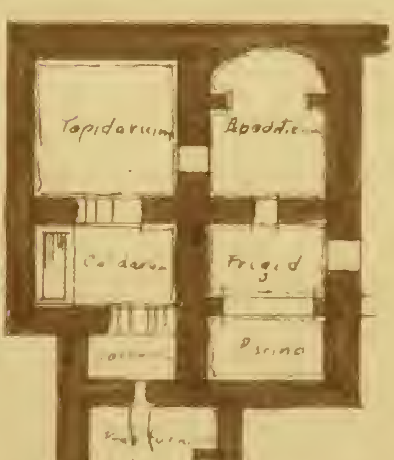


Bath in Finland

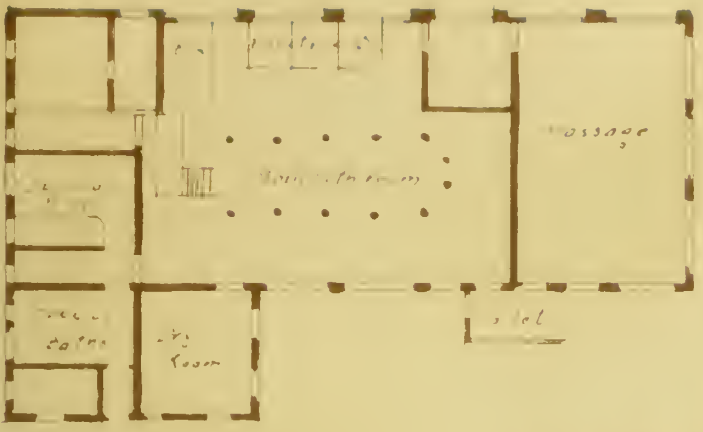
2

Baths of Roman Villa at Allenz

1

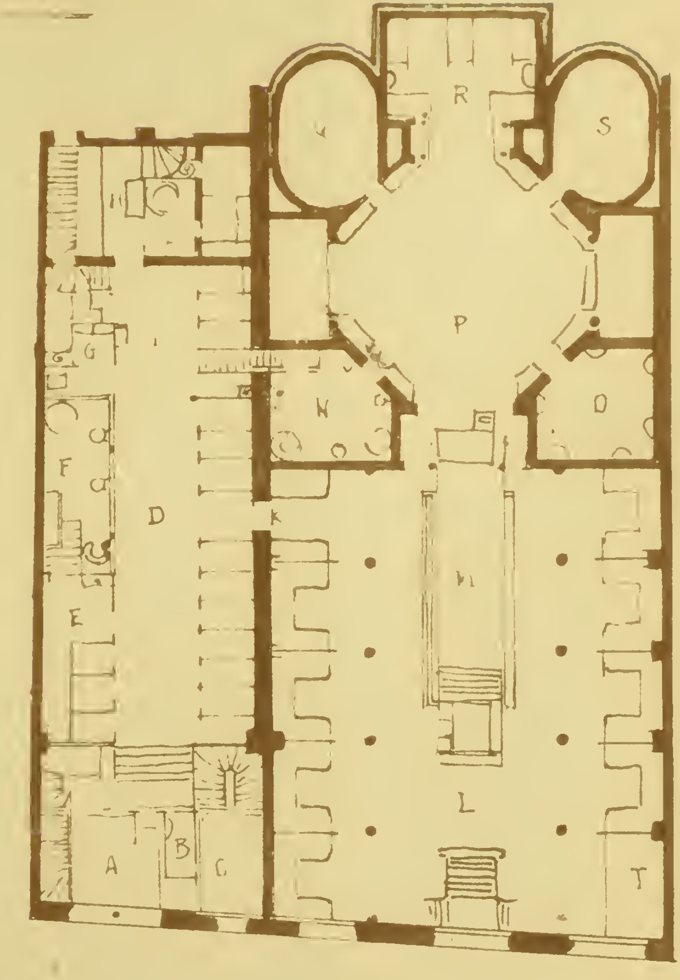


Roman Private Bath at Caerwent



Baths

7

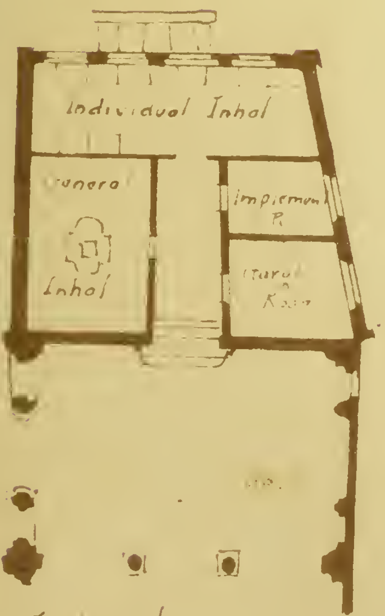


Turkish Roman Bath "Le Hammam" Paris

A Entrance Hall
B Cafe
C Stairs
D Undressing R
E Toilet
F Mens Hydrotherapy
G Ent for Women
H Rest Room
I Shower Room
J Tepidarium
K Passage
L Rest Room
M Cold plunge
N Shower Room
O Wash room
P Tepidarium
Q [illegible] on [illegible]
R Massage Room
S Caldarium
T Buffet

Ref "Handbuch"

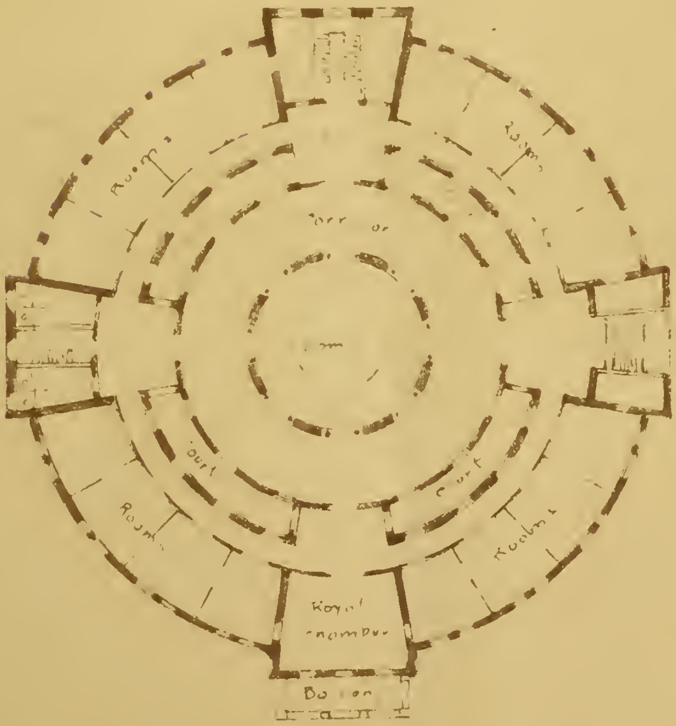
12



Inhalatorium "Kochbrunnen"

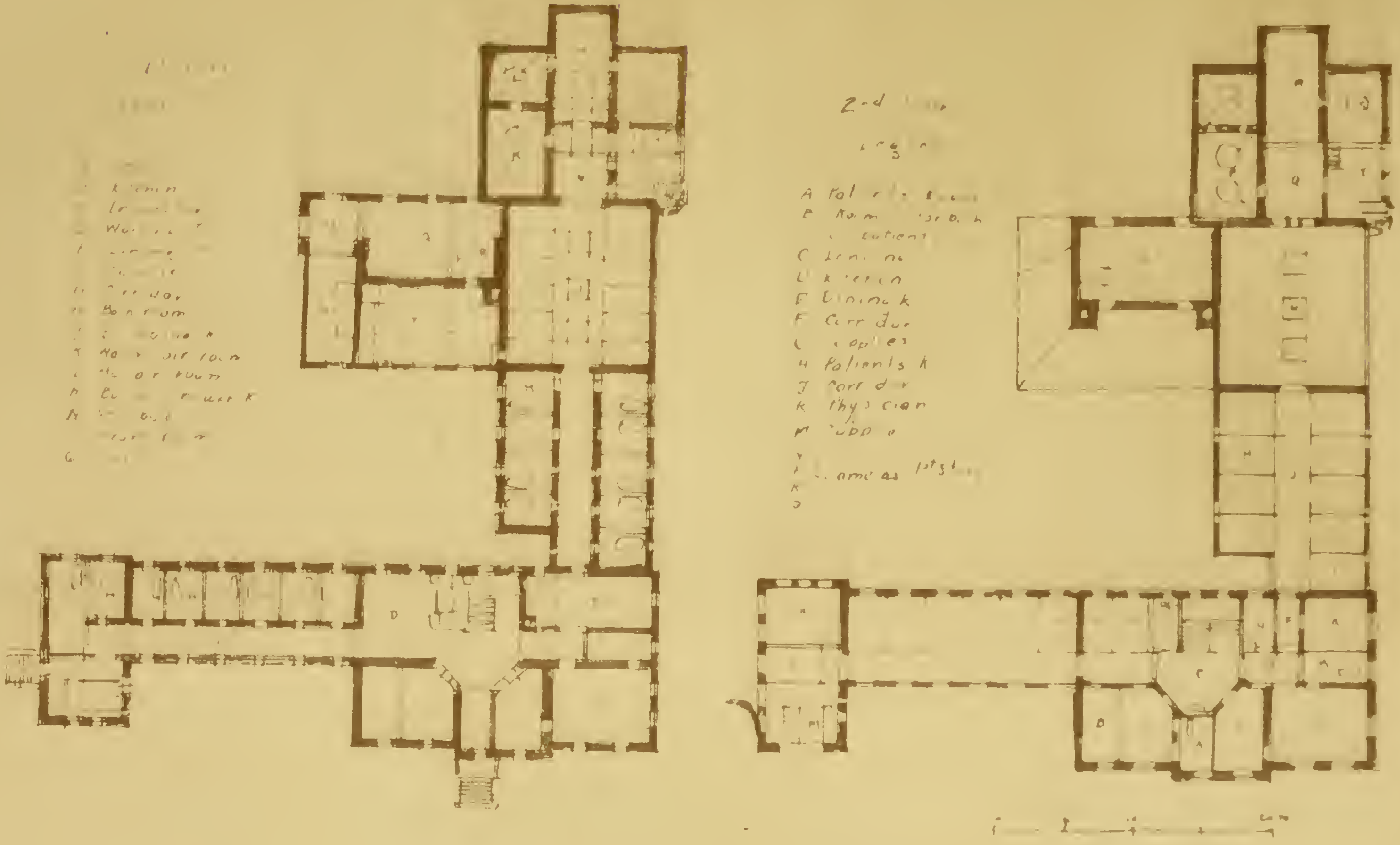
Lower Story

7

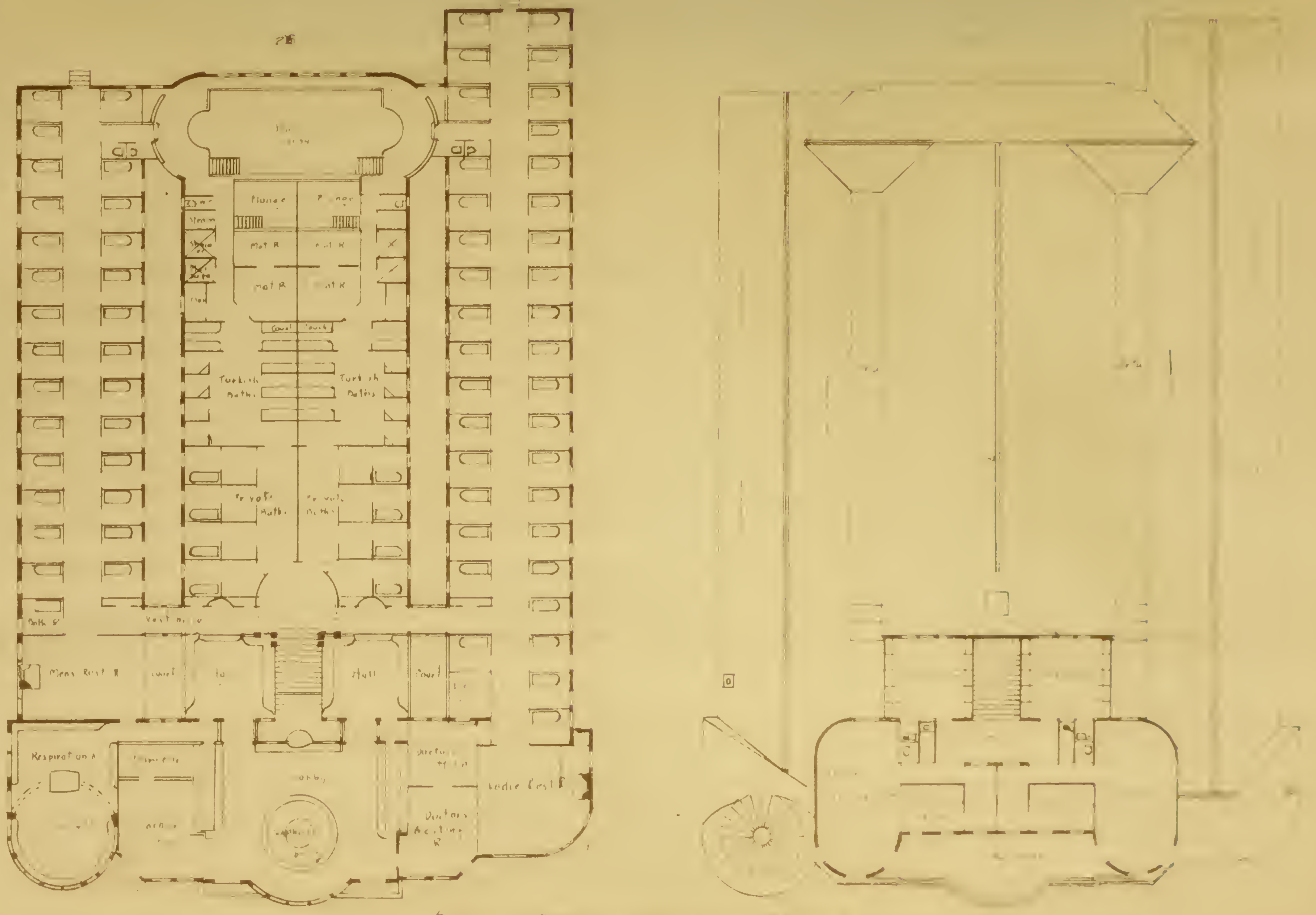


Upper Story

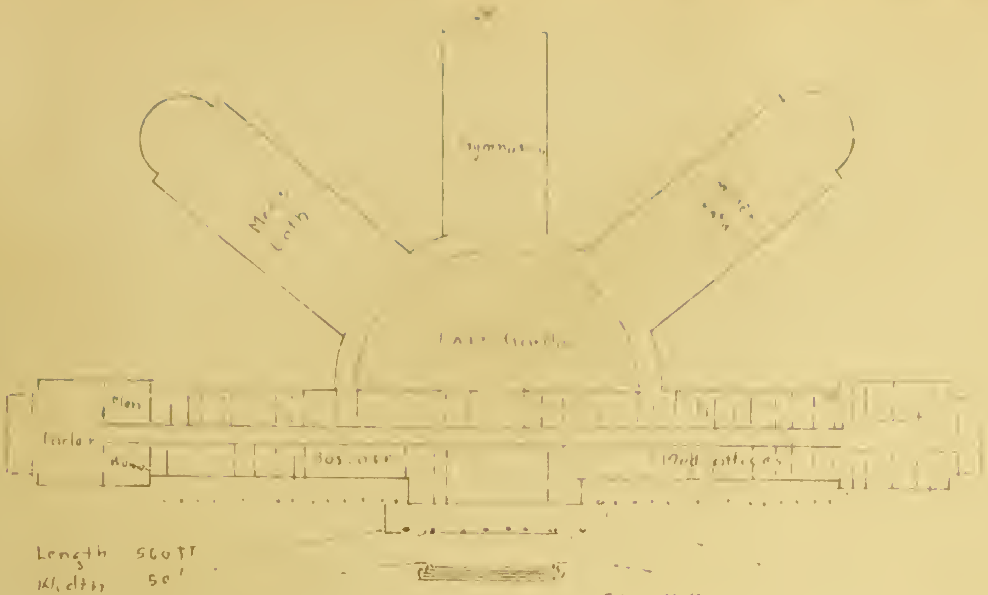
MARIE[illegible]



Hydrotherapeutic establishment at Zwickau



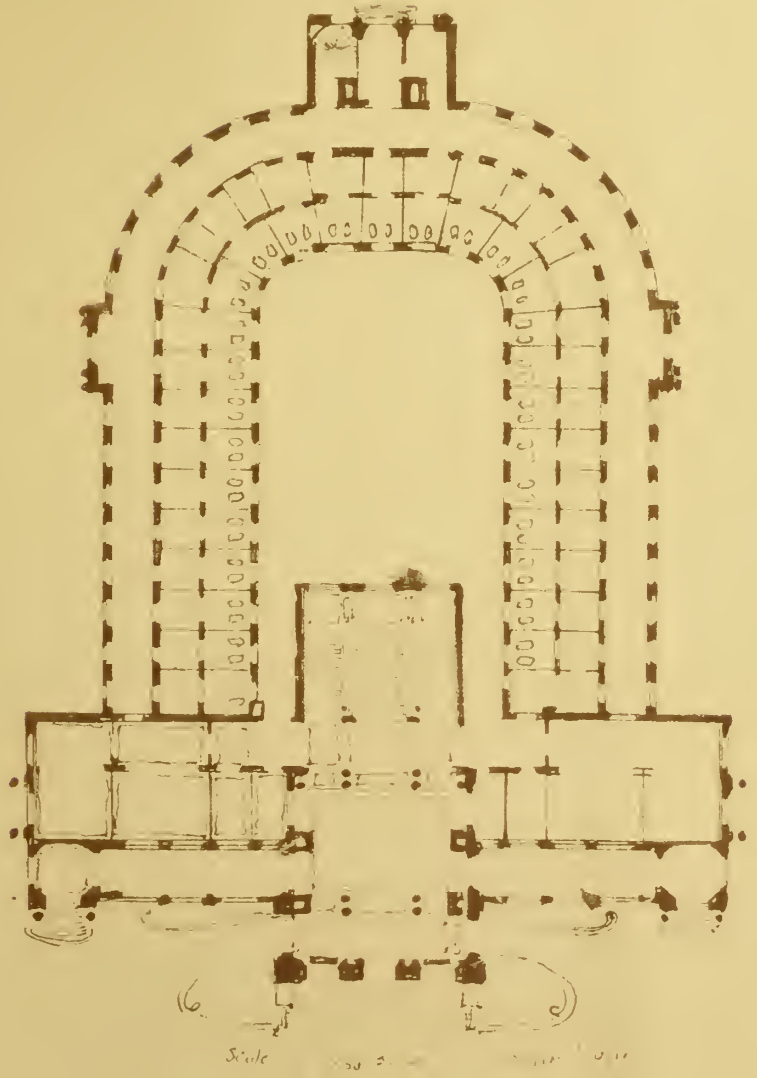
SULPHUR BATH AT [illegible] SPRINGS



Length 560 ft
Width 50'
Depth 254'

BATTLE CREEK SANITARIUM

29



KAISERBAD AT CARLSBAD